Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] What is claimed is:

1.An output circuit comprising:

an output port electrically connected to an output cable in a detachable manner;

a signal circuit electrically connected to the output port for providing a signal current to the output port; and

a decision module electrically connected to the output port for determining whether the output port is electrically connected to the output cable according to a signal voltage of the output port.

[c2] 2.The output circuit of claim 1 wherein the decision module comprises a comparator for comparing whether the signal voltage of the output port is larger than a predetermined signal threshold and the comparison result of the comparator determines whether the output port is electrically connected to the output cable.

[c3] 3.The output circuit of claim 2 wherein the decision module determines that the output port is not electrically connected to the output cable if the signal voltage of the output port is larger than the signal threshold.

[c4] 4.The output circuit of claim 1 wherein the decision module comprises a comparator for comparing whether the signal voltage of the output port is larger than a predetermined detecting threshold when the decision module determines that the output port is not electrically connected to the output cable, and the decision module determines whether the output port is electrically reconnected to an output cable according to the comparison result of the comparator.

[c5] 5.The output circuit of claim 4 wherein the decision module further comprises an amplifier electrically connected between the output port and the comparator for amplifying the signal voltage of output port when the decision module determines that the output port is not electrically connected to the output cable, and the comparator compares whether the amplified signal voltage of output port is larger than the detecting threshold.

[c6] 6.A method for detecting whether an output port of a circuit is electrically connected to an output cable, the method comprising:
(a) receiving a signal from the output port; and
(b) determining whether the output port is electrically connected to the output cable according to a signal voltage of output port.

[c7] 7.The method of claim 6 wherein the step (b) determining whether the output port is electrically connected to the output cable is according to whether the signal voltage of the output port is larger than a predetermined signal threshold.

[c8] 8.The method of claim 7 wherein it is determined that the output port is not electrically connected to the output cable when the signal voltage of the output port is larger than the signal threshold.

[c9] 9.The method of claim 6 further comprising providing a detecting signal to the output port when it is determined that the output port is not electrically connected to the output cable, the detecting signal having non-zero average power.

[c10] 10. The method of claim 9 further comprising comparing whether the signal voltage of the output port is larger than a predetermined detecting threshold after it is determined that the output port is not electrically connected to the output cable, then determining whether the output port is electrically re-connected to an output cable again according to the comparison result.

[c11] 11. The method of claim 10 wherein it is determined that the output port is not electrically re-connected to an

output cable when the signal voltage of the output port is less than the detecting threshold.

[c12] 12.The method of claim 10 further comprising amplifying the signal voltage of the output portwhen it is determined that the output port is not electrically connected to the output cable, and comparing whether the amplified signal voltage of the output port is larger than a predetermined detecting threshold, then determining whether the output port is electrically connected to the output cable according to the comparison result.

[c13] 13.The method of claim 10 further comprising providing an output signal to the output port when it is determined that the output port is electrically re-connected to an output cable, and comparing whether the signal voltage of the output port is larger than a predetermined detecting threshold, then determining whether the output port is electrically connected to the output cable according to the comparison result.

[c14] 14.A displaying device comprising:
an output port for electrically connecting to an output cable in a detachable manner;
a signal circuit for providing a signal current to the output port; and
a decision module for electrically connecting to the out-

put port and determining whether the output port is electrically connected to the output cable according to a signal voltage of the output port.

[c15] 15.The displaying device of claim 14 wherein the decision module comprises a comparator for comparing whether the signal voltage of the output port is larger than a predetermined signal threshold and the decision module determines whether the output port is electrically connected to the output cable according to the comparison result of the comparator.

[c16] 16.The displaying device of claim 14 wherein the decision module comprises a comparator for comparing whether the signal voltage of the output port is larger than a predetermined detecting threshold when the decision module determines that the output port is not electrically connected to the output cable, the decision module determines whether the output port is reconnected to an output cable according to the comparison result of the comparator.

[c17] 17.The displaying device of claim 16 wherein the decision module further comprises an amplifier electrically connected between the output port and the comparator, when the decision module determines that the output port is not electrically connected to the output cable, the

amplifier amplifying the signal voltage of the output port, the comparator is used to compare whether the amplified signal voltage of the output port is larger than the detecting threshold.

[c18] 18. The displaying device of claim 16 further comprising: a storing circuit for providing a data signal and reading the data on an optical disc to generate the data signal.